Space Weather Forecast

Issued on Monday, 27 March 2023 at 00:24 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of R1 Minor radio blackouts.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been low over the past 24 hours, with occasional minor Common-class flares recorded. These flares peaked with a small common class at 26/1708 UTC, with this appearing to emanate from the largest and most complex group on the Sun. There are now up to nine sunspot regions on the facing side of the Sun including the above. Perhaps the most notable event on coronagraphs of the 24 hours was an eruptive flare from an active region in the southeastern part of the Sun around 26/0500 UTC. This event has translated into ejecta seen heading largely south and east on imagery, analysis shows a clear miss. At the time of writing no Earth-directed CMEs were observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind showed Earth as transiting a sector of space associated with a fast regime. The solar wind speed has been at elevated to strong levels. The number of particles in the wind was roughly level and near background though was briefly above average. The associated magnetic field was within its typical range, with the north-south component variable and weak in character and spending no protracted amounts of time negative.
The net result of the above solar wind measures was for quiet to unsettled geomagnetic activity throughout.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is most likely to remain low, but with a chance of becoming Moderate with any isolated Moderate-class X-ray flares. The main region likely to give such flares is the largest and most complex in the southwest.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs feature in the forecast. Earth is currently being affected by a fast wind from a 'coronal hole' and speeds are likely to remain elevated through mush of day 1 (27th March) before beginning to slowly ease into day 2 (28th). Geomagnetic activity should peak early in the forecast period, albeit below Minor Geomagnetic Storm G1, before becoming largely quiet once again from day 2 (28 March) as the fast wind wanes. There is a chance that the next coronal hole fast wind may arrive at Earth late on day 4 (30th), increasing activity to Unsettled to Active with a slight chance of G1 minor geomagnetic storms.

Energetic Particles / Solar Radiation: No solar radiation storms are expected, but there remains a slight chance of reaching S1 or greater, should any significant flares occur.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	1	1	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	25	25	25	25
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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